

**Achievement of Market-Friendly Initiatives and Results Program  
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Delivery Approach Proposal  
for the

Data Center Architecture

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# **Delivery Approach Proposal**

**For the**

**Data Center Architecture**

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# 1 Overview

In reference to the e-Government Portal & its Data Center architecture, this document:

- Outlines the current risks & their impact on the e-Government Portal project.
- Discuss MolCT's current position; Technology Choice.
- Articulate MolCT's ( & AMIR ) general & specific interests.
- Detail a way-ahead option that would achieve such interests, & avoids positional-based decisions, providing results in a principled approach.
- Highlights the induced gains from adopting such an approach.

## 1.1 Facts

- A "Data Center Architecture & Implementation" Framework Document was compiled by the assigned Consultant.
- The Framework Document recommends adopting a unified Platform environment wherever possible.
- In planning to adopt such a Framework document & its recommendation, MolCT had to articulate its recommendations.
- MolCT re-contacted the Consultant to develop an Impact Assessment Document for the choices of adoption.
- From an external point of view, it is perceived that MolCT is at a position of selecting either J2EE or .Net for its platform architecture.
- All IQC Task Orders IQC have been on hold for two months
- The Portal Project launch date has already slipped two months, so far.
- RFP-ing Portal-related project is On Hold.
- The Current eGov SGN infrastructure is completely based on Microsoft technology.
- .... Others.

## 2 Major Risks & Impact

Technology Choice, as seen today, is only but a part of such *Components' Architecture & Technology Decisions* required for advancing the many pending activities of the overall project. The other parts being :

- 1- The Web Platform
- 2- The Security Platform
- 3- The e-Services Platform
- 4- The Operating Platform
- 5- The Hardware Platform &
- 6- The Software Technology Choice for each of the Data Center components.

The Indefiniteness of such accumulative decisions exerted a delay on many tasks & activities within the overall project & MoICT's targets.

Examining the effect on the Overall Project, the following primary risks ( major project milestones ) were identified:

- 1- Delivery date & Launch : Portal launch date has slipped, and is still continuing to slip, the target date.
- 2- Resultant delays in implementation of some of 2003 Work Plan items that are dependant on the availability of the Infrastructure. The Portal is the e-Gov Frontal for all its upcoming G-B, G-C, G-G activity.
- 3- Impedance of RFP-ing the upcoming projects & affecting timely utilization of Funds, for its dependency on many outcomes of IQC task Orders, e.g.: The Guidelines, the implementation Framework.
- 4- Delayed IQC Task Orders min activities & their required outcome
  - Infrastructure Expansion & Portal Architecture/Design
  - Software Design & Development of e-services
  - Developing the Implementation Framework & Guidelines
- 5- Other effects from PMO

A paramount direct impact of such delays & risks has been the gradual burn-out of the allocated AMIR & MoICT budgets resulting from the many previously un-planned activities including :

- The several contingency planning attempts,
- Staff Mobilization: In terms of "Time to allocate" & de-allocate, as

well as associated costs with such repeated actions.

- Technology comparisons activities & Impacts & Risks assessments reports.
- Re-runs of recommendations & some architecture framework
- and indeed, the time consumed in processing & creation of such a document & its many alike.

An intangible impact all such risks would be basing any such decisions & choices on non-technical merits, and thus putting at risk the flexibility, scalability & expandability of such sough federated architecture. Needless to say, the effort that would be required to manage & mitigate such new risks.

IQC firms has filed their reports detailing such impacts & risks, and reported a Status of almost Frozen activities.

From the above portrait of such risks & impacts, it can be very evident that MolCT needs to move out of this stagnant position ASAP to recover & recuperate its tracks into the successful delivery of this project in specific, & be able to pursue its overall targets & interests.

### 3 MolCT Current Position

Although, referred to as a “Technology Choice”, the position in reality exceeds such a choice. Better termed “**Components’ Architecture & Technology Decisions**”, it encompasses many other decisions related to the Data Center infrastructure:

- 1- The Web Platform
- 2- The Security Platform
- 3- The e-Services Platform
- 4- The Operating Platform
- 5- The Hardware Platform &
- 6- The Software Technology Choice for each of the Data Center components.

During the past period, much articulation has occurred within MolCT regarding the Technology Choice for the Data Center. The articulation has been around two main technologies, Microsoft .NET and J2EE, although the suggested Federated Architecture does NOT *firmly* dictate a non-heterogeneous infrastructure.

But, the position of having to decide on such a technology choice came about from many factors, among which most important are:

- The Framework document depicted J2EE as the technology of choice for the data center.
- The Framework Document recommended adopting a unified Platform environment wherever possible.
- MolCT vested interest with many vendors such as Microsoft, IBM, Sun & others.

The OpenSource Workshop added another dimension to such articulation & position. This has caused even firmer fixation for MolCT’s position on making such a Technology choice decision.

Although technical merits constitutes a major criteria for selection, but as it stands today, its only advisable that MolCT re-examines its overall interests & focuses all its actions & decisions on achieving its own strategic interests, away from position-based decisions.

MolCT must avoid such position-based decisions, & provide grounds & criteria for actions that are based on principle & its vested interests.

MolCT must communicate externally that al its Decision are interest-based, and make sure to communicate its main Interests for all.



## 4 Interests

Defining these interests must be based on both business & technical merits.

The technical merits were initially captured by the recommendations of the Framework document, but its impact on the Interests ( business & technical ) were not reflected or analyzed. It is understood that the Consultant is now working on developing a document that explains the technical Impacts of such technical merits & decisions.

Thus, this section focuses on revealing & communicating the Business Interests, & will be addressing the Technical Interests as underlined within their Business impact.

In defining interests of MoICT, it must as well consider those interests of its constituent partners & vendors.

Illustrating & communicating such interests, provides grounds & means for *measuring* the benefits, advantages & concluded gain from making any decision or action.

Running any & every action and decision across such illustrated interests provides criteria for weighing the effect of such actions & develops an approach in concluding Principle-based decisions & achieving its strategic interets.

In examining MoICT general & specific interests, a great extend of synergy can be found with those of AMIR.

As perceived today, the following are MoICT's Short-term & Long-Term interests.

### 4.1 *Short-Term Interests*

The Short-term interests of MoICT can be itemized into the following ( not in any order of importance ):

- 1- Not taking any exclusive sides towards any technology or Vendor.
- 2- Be able to pursue its mission & achieve its targets without any delay
- 3- Deliver the projects at hand within Budget
- 4- Not be part in impeding any AMIR activity & IQC tasks, but instead provide grounds for work to continue.
- 5- Timely & appropriate utilization of allocated AMIR Funds & MoICT Budgets
- 6- Maintain the openness of choice for MoICT as much as possible

- 7- No direct or extended cost implications on MoICT
- 8- Any Solution should be standards-based & internationally acclaimed & should guarantee not compromising the highest quality
- 9- Maintain sufficient Interest for all Vendors & Technology providers in supporting & investment continuation in Jordan, MoICT, the ICT market development & eGov initiative, particularly.
  - a. Microsoft
  - b. SUN
  - c. IBM
  - d. CISCO
- 10-Keep MoICT doors open to possible Interest, Support & investment initiation in Jordan, for the ICT Market development, & eGov initiative from other possible vendors, such as
  - a. Oracle
  - b. HP
- 11- Maintain & keep doors open for Open Source initiative in the ICT market & its possible value for the country & eGov initiative.
- 12- Act in a capacity of not locking the options for any initiative.
- 13- In taking any decision, its future impact should not lock MoICT into a mono-culture in any way.
- 14- Select an Approach that that positions the eGov initiative uniquely in the region. No crediting of a specific technology, But brand & market the infrastructure as the most open to all technologies.
- 15-No solution provider to announce any success story, press release, or use any material that refers to the delivery of any sort of service, or solution, or components, without the consent & review of MoICT.
- 16-Provide base for allowing all vendors, jointly, to claim success, and deny single claiming of such success. All vendors & partners MUST coordinate such messages with MoICT prior its issuance, or risk MoICT publicly denying.
- 17-MoICT be the first to announce any such messages.
- 18- Select & negotiate the best solutions on firm technical merits. Select

technologies & components that are reliable, mature, stable, and proven to provide stability, scalability, availability & robustness.

19-Avoid any compromise on the quality. Avoid any sort of Short-cuts & only go for full implementations.

20-

## ***4.2 Long-Term Interests***

The Long-term interests can be itemized into the following ( not in any order of importance ):

- 1- Maintain the openness of choices for MoICT as much as possible.
- 2- Use such openness in attracting further Investment in the country & its ICT market.
- 3- Leverage the Openness in establishing fair competition between all such investment interests, and benefit from the resultant offering & promotions.
- 4- Be in-line with, promote & lead the ICT market & Jordan to be positioned & foreseen as the Services IT Hub for the region, by being as open, comprehensive & diverse in its offering.
- 5- Being in the position of advocacy for promoting the Development of the ICT Market in Jordan, MoICT's interest is to provide an example of Best Practices & be the Model to follow.
- 6- Take lead in promoting the Software Industry not just by setting the Policies & Regulations, but rather by providing & incubating a market environment for such industry to manifest.
- 7- Set a Model for adopting only standards-based & internationally acclaimed solutions.
- 8-

## ***4.3 How to move ahead ?***

Given such interests, & having to define & conclude actions & decisions, MoICT needs to adopt an approach that :

- **Will deliver on each and every one of those interests**

- Will provide grounds for work to continue, that of AMIR & MolCT.
- Evade the debate & position of J2EE or .NET, and focus more on interests & benefits
- Does not specify or enforce any PRODUCT or Direction
- Hopefully provides cost savings on Project Budget & MolCT budget
- Timely & appropriate utilization of Funds & Budgets
- ... Others

## 5 The way ahead - Approach

### 5.1 Approach Rationale

To be able to better digest such interests, it is advised to separate the way one perceives Technology from that of its Vendor interest; and thus, it is required to notice & realize the differentiation between saying, for example:

- Microsoft Solutions & .Net-based Solutions
- Sun Solutions & Java-based Solutions & RISC Technology

For example,

- Adopting Microsoft Solutions is different from the perception of adopting .Net Solutions & technology.
- Adopting Java Technology does not necessarily mean NOT being able to adopt Microsoft solutions In the Data Center,
- Adopting Java-based Solutions does not necessarily mean having to standardize on RISC.
- Adopting Java based Solutions does not restrict from being able to utilize some OpenSource solutions.

And that perception should apply when considering MolCT specific Interests, and those mutual with its constituent partners & vendors.

So, for example, working with Intel & Microsoft Windows platform does not necessarily have to mean working with .NET, but yet, there is a vested interest for Microsoft in selecting its operating platform.

Another example, Working with Java technology, does not mean ruling out MS-SQL & other Microsoft based solutions, but yet, such an approach maintains the vested interests of Java-based Solution & technology providers, as well as maintaining some vested interest for Microsoft in selecting its Solutions & operating platforms.

Interests of vendors is quite tricky, and it has its multi-magnitude :

- SUN : Sells its RISC Machines, Provides Java technology, Provide their own Operating Platform, as well as selling their Software solutions
- IBM : Sells Intel-Based & RISC-Based Solutions, provides Java Technology & OpenSource, provide their own Operating platform from each technology, and yet, they sell their own Solutions

- Microsoft : Sell their own Operating platform, their own Solutions, as well as recently providing .Net Technology.

Thus, mutual interest of these vendors can be achieved in many different approaches. But MoICT has to be aware of implications of such selections. For example, adopting Java technology DOES NOT restrict usage of

- Intel as a H/W platform ( in addition to RISC ),
- Windows as an Operating System, and
- to an extent, some Microsoft Solutions. I.e.: Selecting Java technology now, does not restrict the usage of the existing MoICT implementations of MS-Exchange Mail & Active Directory ! .

On the other hands, deciding to adopt .NET, could be a very good choice, but it DOES restrict the usage of

- RISC-based platforms,
- Java/J2EE technology,
- any OpenSource solutions.

Bottom line, the approach should take into consideration all the above interests, and maintains advantage of keeping MoICT Open to all options.

The Benefit & gain should finally be that of MoICT, but in implementing an approach that is based on the realization of the specific & mutual interest depicted above, the gain is maximized for MoICT mainly, and vendors, secondly. The details of such Gain in depicted in the subsequent section.

Yet, as it is evident, a big part of the eGovernment lies at the ministries & institutes, and not at the Data Center. This is stemming as a main benefit of the concept of a Federated architecture. Meaning, much of the investment lies in implantations at those Service Providers. The Data Center is only seen as the provider of the Shared Services, as well as being the Unified Frontal to the external world.

Ministries & Institutes can still maintain their representation to the outer world, adjacently to projecting their Services through the Unified Frontal; the eGov Portal, provided that they follow the Implementation Guidelines & Interoperability Framework.

Now, to be able to achieve such interests, MoICT needs to examine any decision against them. In doing that, it is gathered that MoICT can better deliver on such interests if it perceives & examines the technology Choice per component or layer, & not as a whole.

This stage requires ONLY recommending the technology for the currently required components & layers of the Data Center. The Data Center, and as planned, will grow to include many other components & layers in the upcoming two years, and a technology decision can be sought at each level.

## **5.2 Approach elements& options**

In articulating an Approach, the following must be considered :

1. Network Platform
2. Operating Platform
3. Hardware Platform
4. Web Platform
5. E-Services Development Platform
6. Web Security Platform
- 7.

This articulation does not address issues of scalability, availability, & robustness, but rather depicts the options available for choice in abstraction of such factors, and reveals the flexibility & limitations endured from any such options.

### **5.2.1 Network Platform:**

Architecture work is being carried on for that part, and it can be finalized & procured irrespective of the any action or decision.

### **5.2.2 Operating Platform:**

The Decision of the Operating platform is considered as part of the required Architecture Components Decisions. Such a decision is tightly coupled with the Hardware Platform Decision. I.e.:

- Choosing RISC as the Hardware platform rules out Windows Operating platform,
- Choosing CISC ( Intel ) as the hardware platform rules out Solaris/AIX operating platforms.

### **5.2.3 Hardware Platform**

The choice of Hardware platform is considered as part of the required Architecture components decisions. That is; will it be RISC or CISC ( Intel ) ? Such a decision is tightly coupled with the Operating Platform Decision. I.e.:

- Choosing Windows as the Operating platform limits the Hardware Platform to Intel,

- Choosing Linux as the Operating platform provides a choice between RISC & CISC ( Intel ).

#### **5.2.4 Web Platform**

The Decision of the Web platform is considered as part of the required Architecture Components Decisions. Such a decision is tightly coupled with the Hardware & Operating Platform Decision. I.e.:

- Choosing IIS as the Web platform rules out RISC-based Hardware & Operating platforms,
- Choosing Apache provides the full choice for Operating & Hardware Platform.

Deciding on the Hardware & Operating Platforms prior the Web Platform, limits the choices for the Web Platform. I.e.:

- Choosing RISC-based Hardware Platforms rules out IIS,
- Choosing Intel-based Hardware Platforms provides the full choice.

#### **5.2.5 E-Services Development Platform**

The Decision of the e-services development platform is considered as part of the required Architecture Components Decisions. Such a decision is tightly coupled with the above trio platforms ( hardware, operating & Web ) and has a major effect on the Development Technology, I.e.:

- Choosing Intel-based hardware platform, Windows Operating Platform & IIS Web Platform keeps the options open for the usage of .NET & Java technology.
- Choosing .NET technology forces the usage of Intel-based hardware platform, Windows Operating Platform & IIS Web Platform, and locks out the potential of Java Technology or any OpenSource technologies.
- Choosing Java as the Development platform, allows the usage of OpenSource Development technologies.

#### **5.2.6 Web Security Platform**

The Decision of the Web Security platform is considered as part of the required Architecture Components Decisions. Such a decision is tightly coupled with above Platforms Decision. I.e.:

- Choosing Intel-based hardware platforms rules out the usage of Hardened/Trusted Operating System ( B1 Security Level ),
- Choosing Apache on RISC provides the full choice for Operating & Hardware Platform.

Web Security Solutions are usually heavily tied to Hardware & Operating platforms.



### **5.2.7 DataStore Platform**

The Decision of the DataStore platform is considered as part of the required Architecture Components Decisions. Such a decision is tightly coupled with above Platforms Decision. I.e.:

- Choosing Intel-based hardware platforms & Windows Operating platforms, keeps the options for the database choice open.
- Choosing RISC-based hardware platforms rules out MS-SQL, and vice-versa, choosing MS-SQL forces the usage of Intel-based hardware platforms & Windows Operating platform.

The Choice of any Development Platform has no impact on the DataStore decision, but yet, in selecting the Development Platform, it is advised to verify the availability of connectivity DataStore options.

### **5.2.8 Other Application Components**

Application components choices depend highly on all the above platform decisions. In grouping such components in Layers/Tiers and make above Development Technology/Platform decision for each Layer/Tier, a selection Criteria is established. I.e.:

- Selection of Java for the e-services development platform, provides the basis for choosing Application & Integration Servers
- Selection of Microsoft Solution for the Collaboration services, dictates the usage of Intel, Windows based servers.

Some application components, such as FileNET WCM selected for the Content Management System, can run on many hardware, Operating, Web & DataStore platforms.

In fact, it is preferred to have multi-platform operability as a major selection factor & preference metric when comparing products. That can be achieved by keeping the IIF ( Interoperability Framework ) directives as paramount when making any selection.

## **5.3 The Approach Details**

After elaborating the rationale & examining the options, it becomes easier to articulate an approach ( or multiple approaches ) that maintains the elaborated interests.

### 5.3.1 Approach 1

Group the components in layers/Tiers and position solution/technology per each layer/tier elements.

The Web Platform - ( Future Portal Server Platform ) :

The e-services Platform - Application Server Component:

The DataStore Platform :

The Content Management System Component :

.... etc.

An example structure :

For the Web Platform - ( Future Portal Server Platform ) :

- Hardware Platform is XXX-Based
- Operating Platform can be XXX
- OpenXXX for the YYY

For the e-services Platform - Application Server Component:

- Hardware Platform is XXX-based
- Operating Platform is XXX
- Development Platform is XXX or YYY : OpenSource or Commercial

For the DataStore Platform :

- Hardware Platform is XXX-based
- Operating Platform is XXX
- Database Engine is XXX

For the Content Management System Component :

- Hardware Platform is XXX-based
- Operating Platform is XXX
- Database Engine is XXX

Keep in mind that Collaboration Layer & Network Operating System Layer ( Enterprise Directory ), namely the Exchange Server & ActiveDirectory Servers components, are already based on Intel/Windows/IIS platforms.

When Selecting silution/technology for each elements, Keep in mind the interests of all vendors. I.e.:

- Position some Open Source technologies such as Linux on some machines, OpenSSL, Maybe JBoss,
- Position Some Microsoft solutions ( Windows, SMS Server, SQL, ... )
- Position some Java based solutions/technology
- Position RISC servers somewhere ( Web Maybe )
- ... etc.

The concept is to have success shared by everyone, giving each something to market as a success, offcourse, without compromising the integrity of the solution, and moist importantly, keeping the IIF in perspective when selecting such elements.

As for anticipated future components, option is always available for selection, based on the Layer/Tier it fits within, and if new Layer/Tier, then option can be exercised freely provided the compliance with IIF. An example of such component is per se: Microsoft SMS Server that would fit into the Systems management Tier/layer.

### **5.3.2 Approach 2 :**

Articulate a second approach, as per directives above.

## **6 Gains & Impacts**

MolCT's Gains from adopting such an approach, is primarily achieving its set interests. Other induced gains, and their related Impact, if any are :

### **6.1 *Short-Term Gains/Impact***

- 1- The Marketing message reflected by MolCT is not directed towards a single vendor/technology, but rather of a unique position that provides success criteria to all three camps of Java, .Net & OpenSource.
- 2- Such vendor interest is diminished
- 3- Non-biased approach
- 4-

LIST Gains HERE

### **6.2 *Long-Term Gains/Impact***

LIST Gains HERE

## **7 Conclusion**